WHAT IS CLAIMED IS:

1. An automated computer-implemented method for reorienting ECT myocardial perfusion images of a left ventricle (LV) of a heart, the method comprised of:

receiving variously oriented tomographic images of a reconstructed volume of a heart;

determining or receiving the LV long-axis and LV center (x_c,y_c,z_c) and determining or receiving axial limits (z_{apex} and z_{base}) of the LV based on the tomographic images;

determining or receiving the endocardial surface of the LV based on the tomographic images;

determining a reorientation slice range based on the center and axial limits of the LV;

receiving or reconstructing a number of slices (N) within the reorientation slice range;

for each slice i=1 to N, determining a center coordinate x[i], y[i] based on the endocardial surface and the area of the slice i within a reorientation slice range coordinate system;

determining translation values Δx_i, Δy_i and rotation values θ_x, θ_y based on the center coordinates x[i=1 to N], y[i=1 to N] to reorient the long axis of the LV to the z-axis and its origin of a reference Cartesian coordinate system; and

automatically reorienting and realigning the tomographic images based on the translation values and rotation values to obtain reoriented ECT images reoriented and realigned to the long axis of the left ventricle.

2. The method of claim 1 wherein the reorienting step includes realigning, co-registering and centering the variously oriented input tomographic images to obtain a plurality of oriented ECT images.

3. The method of claim 1 wherein the reorienting step is performed using an affine transform.

4. The method of claim 1 further comprising determining functional parameters based on the reoriented ECT images.

5. The method of claim 1 further comprising determining perfusion parameters based on the reoriented ECT images.

6. The method of claim 1 wherein the variously oriented tomographic images are generated by perfusion imaging software.

7. A computer-implemented system for reorienting ECT myocardial perfusion images of a left ventricle (LV) of a heart, the system comprised of one or more computers, the one or more computers configured to:

receive variously oriented tomographic images of a reconstructed volume of a heart;

determine or receiving the LV long-axis and LV center (x_c,y_c,z_c) and determine or receive axial limits (z_{apex} and z_{base}) of the LV based on the tomographic images;

determine or receive the endocardial surface of the LV based on the tomographic images;

determine a reorientation slice range based on the center and axial limits of the LV;

receive or reconstruct a number of slices (N) within the reorientation slice range;

for each slice i=1 to N, determine a center coordinate x[i], y[i] based on the endocardial surface and the area of the slice i within a reorientation slice range coordinate system;

determine translation values Δx_i, Δy_i and rotation values θ_x, θ_y based on the center coordinates x[i=1 to N], y[i=1 to N] to reorient the long axis of the LV to the z-axis and its origin of a reference Cartesian coordinate system; and

automatically reorient and realign the tomographic images based on the translation values and rotation values to obtain reoriented ECT images reoriented and realigned to the long axis of the left ventricle.

8. The system of claim 7 wherein the one or more computers is configured to realign, co-register and center the variously oriented input tomographic images to obtain a plurality of oriented ECT images.

9. The system of claim 7 wherein the one or more computers is further configured to reorient and realign the tomographic images using an affine transform.

10. The system of claim 7 wherein the one or more computers is further configured to determine functional parameters based on the reoriented ECT images.

11. The system of claim 7 wherein the one or more computers is further configured to determine perfusion parameters based on the reoriented ECT images.

12. The system of claim 7 wherein the variously oriented tomographic images are generated by perfusion imaging software.

13. A computer-implemented apparatus for reorienting ECT myocardial perfusion images of a left ventricle (LV) of a heart, the apparatus comprised of:

means for receiving variously oriented tomographic images of a reconstructed volume of a heart;

means for determining or means for receiving the LV long-axis and LV center (x_c,y_c,z_c) and means for determining or means for receiving axial limits (z_{apex} and z_{base}) of the LV based on the tomographic images;

means for determining or means for receiving the endocardial surface of the LV based on the tomographic images;

means for determining a reorientation slice range based on the center and axial limits of the LV;

means for receiving or means for reconstructing a number of slices (N) within the reorientation slice range;

for each slice i=1 to N, means for determining a center coordinate x[i], y[i] based on the endocardial surface and the area of the slice i within a reorientation slice range coordinate system;

means for determining translation values Δx_i, Δy_i and rotation values θ_x, θ_y based on the center coordinates x[i=1 to N], y[i=1 to N] to reorient the long axis of the LV to the z-axis and its origin of a reference Cartesian coordinate system; and

means for automatically reorienting and realigning the tomographic images based on the translation values and rotation values to obtain reoriented ECT images reoriented and realigned to the long axis of the left ventricle.

14. The apparatus of claim 13 wherein the means for reorienting includes a means for realigning, co-registering and centering the variously oriented input tomographic images to obtain a plurality of oriented ECT images.

15. The apparatus of claim 13 wherein the means for reorienting includes a means for performing an affine transform.

16. The apparatus of claim 13 further comprising a means for determining functional parameters based on the reoriented ECT images.

17. The apparatus of claim 13 further comprising a means for determining perfusion parameters based on the reoriented ECT images.

18. The apparatus of claim 13 wherein the variously oriented tomographic images are generated by perfusion imaging software.

19. An automated computer-implemented method for reorienting ECT myocardial perfusion images of a left ventricle (LV) of a heart, the method comprised of:

receiving variously oriented tomographic images of a reconstructed volume of a heart generated by perfusion imaging software;

receiving the LV long-axis and LV center (x_c,y_c,z_c) and receiving axial limits (z_{apex} and z_{base}) of the LV based on the tomographic images;

receiving the endocardial surface of the LV based on the tomographic images;

determining a reorientation slice range based on the center and axial limits of the LV;

receiving a number of slices (N) within the reorientation slice range;

for each slice i=1 to N, determining a center coordinate x[i], y[i] based on the endocardial surface and the area of the slice i within a reorientation slice range coordinate system;

determining translation values Δx_i, Δy_i and rotation values θ_x, θ_y based on the center coordinates x[i=1 to N], y[i=1 to N] to reorient the long axis of the LV to the z-axis and its origin of a reference Cartesian coordinate system; and

automatically realigning, co-registering and centering the tomographic images based on the translation values and rotation values to obtain reoriented ECT images reoriented and realigned to the long axis of the left ventricle.

20. The method of claim 19 wherein the reorientation step is performed using an affine transform.